FINANCIAL ECONOMICS INSTITUTE

CLAREMONT MCKENNA COLLEGE

The Financial Economics Institute
Research Analyst Application
Summer 2024

The Financial Economics Institute is hiring several full-time student Research Analysts to work (**remotely**) for 10 weeks, Monday through Friday, 8:00 a.m.-12:00 p.m. and 1:00 p.m.-4:30 p.m., during the Summer of 2024 beginning Tuesday, May 28th through Friday, August 2nd with the possibility of continuing part-time during the academic year. Students will assist faculty members with research projects and Institute staff with general Institute operations. Specific responsibilities may include data collection, data entry, maintaining databases, programming, and general clerical work. Wages will be $19.00/hour, with maximum possible earnings of $6,982.50 for a 10 week position.

To be eligible you must be a current CMC student and registered for fall 2024, reside in California during your summer (remote) employment, have a US bank account, social security number, and if applicable, a current F1 visa.

To apply, please email the following to Nancy Faust (Nancy.Faust@cmc.edu) by 12:00 midnight on Thursday, March 28th, 2024:

1. **Your resume.**
2. **Your unofficial transcript.**
3. **This form, answering all questions below as directed.**

NOTE: all documents should be Word or pdf files. No online documents will be accepted.

If you have any questions, please email Nancy Faust at nfaust@cmc.edu

Please supply the following information:

Your Name: Pranav Patel

Date: 03/18/2024

Email address: ppatel26@students.claremontmckenna.edu

Address Telecommuting from: ppatel26@students.claremontmckenna.edu

CMC Registration Status during Spring 2024: ☒ Enrolled ☐ On leave

CMC Registration Status during Fall 2024: ☒ Enrolled ☐ On leave

Class (indicate your graduation year): 2026

Are you planning to complete the Financial Economics Sequence? ☐ Yes ☐ No

Are you currently registered with the registrar as an FES candidate? ☐ Yes ☒ No

Below, please list all computer programs (Stata, Python, R, SQL, etc. and including MS Office components and Visual Basic, etc.) that you have experience using. Please put one program on each line, along with your degree of familiarity with each one (beginner, intermediate, advanced). Please be accurate in your self-assessment of your skills so that we do not get a poor match for your project. Note that we have provided many lines, and you are not expected to be able to provide a program for each line:

1. Python (General, TensorFlow, Matplotlib, os) - Intermediate/Advanced
2. Excel - Intermediate/Advanced
3. C++ - Intermediate
4. Bash - Intermediate
5. Java - Intermediate
6. Maple - Beginner/Intermediate
7. Stata - Beginner/Intermediate
8. R - Beginner/Intermediate
9. Perl - Beginner
10. SQL - Beginner
11.
12.
13.
14.
15.

NOTE that we expect Summer RAs to be available to start on May 28th and work for the entire 10 weeks. If you are unable to meet this schedule due to other obligations, you must briefly explain your conflicts here:

Pranav Patel
Claremont, CA
March 28, 2024
ppatel26@students.claremontmckenna.edu

As a computer science (CS) student, I appreciate the FEI's emphasis on quantitative and computational approaches to economics. To this end, I leverage my prior experience in quantitative data analysis.

I had the opportunity to intern in a genomics lab at the Northwestern School of Medicine. If you're unfamiliar, genetic data is essentially quantitative data scribed in 4 repeating letters: A, G, C, T (or U). Our lab worked towards finding genetic variations that may contribute to genetic disease. Beyond digesting scientific literature and adequately communicating genetic theory, in this role, I independently developed and implemented analyses and visualizations of genetic data, skills that are directly transferable to the field of economics. My last project involved assembling a genetic sequence in which we (my post-doc and I) utilized Monte Carlo methodology to assess the accuracy of different genetic assembly tools.

This opportunity has given me a solid computational toolkit that could benefit data analytic projects in economics. I've worked with high-level languages like Python to analyze data and develop visualizations via Pandas and Matplotlib (all available on my GitHub). I've also worked with mid-level languages like C++ that prioritize execution speed over user interface.

My passion for computational and data analytics extends far beyond my internship experience. I am actively working to bridge my knowledge gap between pure data analytics and economic analytics, demonstrating my dedication to this field. I've been developing machine-learning algorithms focusing on capital interests, with my latest project being a Long Short-Term Memory model on stocks. This project utilizes historical stock data and trains an LSTM to predict future stock prices, showcasing my practical application of computational techniques in an economic context. I've also worked on classification projects that put socioeconomic markers through a dense neural network to determine the likelihood of a particular action or trait (e.g., investment, income).

With my strong background in quantitative analysis and my unique blend of skills, I am confident that I can make a significant contribution to this position. I believe my previous quantitative experience and my passion for this field make me a strong candidate for this position.

Thank you,

Pranav Patel, Claremont McKenna College ‘26

PRANAV PATEL

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(309) 750-4181 • ppatel26@students.claremontmckenna.edu

EDUCATION

Claremont McKenna College, Claremont, CA **May 2026**
Bachelor of Arts
- Major in Economics
- GPA: 3.8/4.0
- Relevant Coursework/Topics: Linear Algebra, Multivariable Calculus, Discrete Mathematics

Harvey Mudd College, Claremont, CA **May 2026**
Bachelor of Computer Science
- Major in Computer Science

SKILLS & INTERESTS

- Machine Learning
  - Consumer Behavior Analysis on Bank Consumer Data to Output Likelihood of Investment
    - 92% accuracy on testing data
  - Classification Model on Census Income Data
    - 78% accuracy on testing data
  - LSTM Model to Predict Stock Prices
- Program Development/Big Data Analysis
  - PRS Analysis Pipeline Generator
- Web Technologies
  - Personal Website

EXPERIENCE

Northwestern School of Medicine – Chicago, IL **Aug 2022 – Present**
Analyst, Steven Lubbe Lab for Motion-Debilitating Disease
- Developed and implemented computational models for polygenic risk analysis via Python, C++, and R, collaborating with post-doctoral researchers and Dr. Steven Lubbe
- Constructed logistic regression model for Genome-Wide Association Study on NIAGADS WES data (1 TB); included collapsing burden analysis, Bonferroni Correction, and Manhattan Plot Visualization (pipeline)
- Developed command-line interfaces for multiple big-data projects to streamline data processing, analysis, and visualization resulting in 50% decrease in user-specific command input; used Python and Java (github)
- Devised big-data analysis methodologies in genetic admixture analysis; liaised with Dr. Steven Lubbe to ensure effective analysis and streamlining of existing methodologies; methodology presented at Japan Super Science Fair 2023 (paper)

Student Connection – Claremont, CA **Aug 2022 – Present**
Analyst, Research Team
- Developing analysis software to automate analyses on manual-entry qualitative and quantitative data
- Develop research methodologies through analysis of current literature
- Utilization of Excel for analyses of qualitative and quantitative data and identification of trends
- Extracted and processed historical stock prices for insertion in Tensorflow-based Long-Short-Term Memory (LSTM) Model for predictive analytics; model consistently performed < 5 RSME

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Date 03/27/24
Student Id: 30383314

Name: Pranav Vijaykumar Patel

Adm Sess/Year: FA 2022
Anticipated Grad Date: SP 2026

Major1: Computer Science
Major2: Economics
Dual:
Seq:

Advisor 1: Libeskind-Hadas, Ran
Advisor 2: O'Neill, Melissa E.

Fall Term 2022

BIOL043L	KS	Introductory Biology	1.00 A-
BIOL043LXKS		Introductory Biology Lab	0.00 X
FHS 010	CM	Caste, Race, and Equality	1.00 A
MATH032H	CM	Honors Sem in Calculus III	1.00 B
MATH055	CM	Discrete Mathematics	1.00 A

	attempt	earn	pass	quality	points	gpa
ses	4.00	4.00	0.00	4.00	14.67	3.667
cum	4.00	4.00	0.00	4.00	14.67	3.667

Spring Term 2023

BIOL044L	KS	Introductory Biology	1.00 A
BIOL044LXKS		Introductory Biology Lab	0.00 X
CHEM029L	KS	Accelerated General Chemistry	1.00 A
CSCI005	HM	Introduction to Computer Science	1.00 A-
FWS 010	CM	Voice, Variety, and Vernacular	1.00 A
MATH060	CM	Linear Algebra	1.00 A

	attempt	earn	pass	quality	points	gpa
ses	5.00	5.00	0.00	5.00	19.67	3.934
cum	9.00	9.00	0.00	9.00	34.34	3.815

Fall Term 2023

BIOL143	KS	Genetics	1.00 B+
CSCI060	HM	Principles of Computer Science	1.00 A
PE 046	JP	Floor Hockey	0.00 P
PHIL033	CM	Intro: Political Philosophy	1.00 A
PHYS033L	KS	Principles of Physics	1.00 A-

	attempt	earn	pass	quality	points	gpa
ses	4.00	4.00	0.00	4.00	15.00	3.750
cum	13.00	13.00	0.00	13.00	49.34	3.795

Spring Term 2024

CSCI070	HM	Data Structures/Prgm Development	1.00 IP
ECON050	CM	Principles of Economic Analysis	1.00 NR
HIST154	CM	Makers of Modern India/Pakistan	1.00 IP
LIT 099C	CM	Literature & AI	1.00 IP
RLST189C	PO	African-American Religion	1.00 IP

	attempt	earn	pass	quality	points	gpa
ses	0.00	0.00	0.00	0.00	0.00	0.000
cum	13.00	13.00	0.00	13.00	49.34	3.795
